



# Section D

## ***Spent Nuclear Fuel***

### **PROJECT MANAGERS**

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## SUMMARY

The Spent Nuclear Fuel Project (SNFP) mission consists of the SNFP WBS 1.3.1.1 (Project Baseline Summary [PBS] WM01) and the subsequent Canister Storage Building (CSB) Operations Project WBS 1.3.2.1 (PBS WM02), which does not start until fiscal year (FY) 2005.

NOTE: Unless otherwise noted, the Safety, Conduct of Operations, Milestone Achievement, and Cost/Schedule data contained herein is as of September 30, 2001. All other information is as of October 17, 2001, unless otherwise noted.

Fiscal year milestone performance (EA, HQ, and RL) showed that three out of five milestones (60 percent) were completed late and two milestones are overdue.

The Milestone Achievement details, found following the cost and schedule variance analysis, provide further information on all milestone types.

## TOP 5 ACCOMPLISHMENTS FOR FY 2001

**Commenced Fuel Removal from K West (KW)** – The SNFP commenced fuel removal from KW Basin on December 7, 2000.

**Moved 27 Multi-Canister Overpacks (MCOs)** – The SNFP moved a total of 27 MCOs, 126.94 Metric Tons Heavy Metal (MTHM), from K West Basin to the CSB. Placed into interim, safe storage in tubes below the CSB. This achievement exceeded the SNFP's FY goal to move 25 MCOs by two.

**Alternate Fuel Transfer Strategy (AFTS)** – The SNFP developed, proposed and gained approval for AFTS to move the K East (KE) Basin fuel into the KW Basin for processing.

**Sludge Removal Strategy** – A new sludge removal and de-watering strategy with an estimated cost savings of approximately \$9 million was developed, proposed and adopted.

**Deactivation Acceleration** – A plan to accelerate 100 Area deactivation consistent with the stretch commitment has been documented in Baseline Change Request (BCR) No. SNF-2001-023. The BCR establishes a new baseline that accelerates deactivation of 100K Area to September 30, 2006.

## ADDITIONAL FY 2001 ACCOMPLISHMENTS

**Cold Vacuum Drying Facility Fuel Processing / Production Improvements** – The processing times at the CVDF have been reduced from approximately 100 working hours per MCO to a current average of 86.2 working hours per MCO, 3.8 working hours less than the required target of 90 working hours.

**Sludge Handling Project** – The Conceptual Design Document for the Sludge Handling Project was approved and released April 3, 2001. RL submitted this document to the Washington Department of Ecology on June 11, 2001 to satisfy TPA milestone M-91-18.

**105K West Fuel Processing / Production Improvements** – Installation of tables in the KW Basin have reduced processing times by more than 50 percent during the past year. The current average processing time is 38.9 working hours, 6.1 working hours less than the required target processing time of 45 working hours.

**Simultaneous Start-up of Three Nuclear Facilities** – The successful simultaneous start-up of the CSB, CVD and KW facilities is an accomplishment unsurpassed by any other DOE nuclear facility being brought on-line in recent history.

**Safety** – SNFP achieved over 3.3 million work hours without a lost time injury in FY 2001.

**Quality Assurance (QA)** – The SNFP received an "excellent" rating by DOE's National SNFP Program with no outstanding deficiencies or corrective actions at audit completion. This is the first cleanup project

in Hanford's history to pass the QA standards of the Office of Civilian Radioactive Waste Management (OCRWM).

**Baseline Change Requests** –BCRs were initiated for the AFTS and sludge equipment changes.

**Fuel Basket Fabrication** – Over 850 fuel baskets were fabricated and 82 MCOs with full QA inspections received.

**Shippingport Reactor PWR Fuel** – The SNFP completed Standard Start-up Review and is preparing to begin fuel drying of the Shippingport fuel in late November.

**Budget at Completion on Target** - Completed the FY within targeted budget.

**Outages** – Successfully accomplished two maintenance outages.

## **ACCOMPLISHMENTS FOR THIS REPORTING PERIOD**

**Fuel Movement Activities** —The twenty-seventh MCO was shipped to the Cold Vacuum Drying Facility (CVDF) on September 27, 2001.

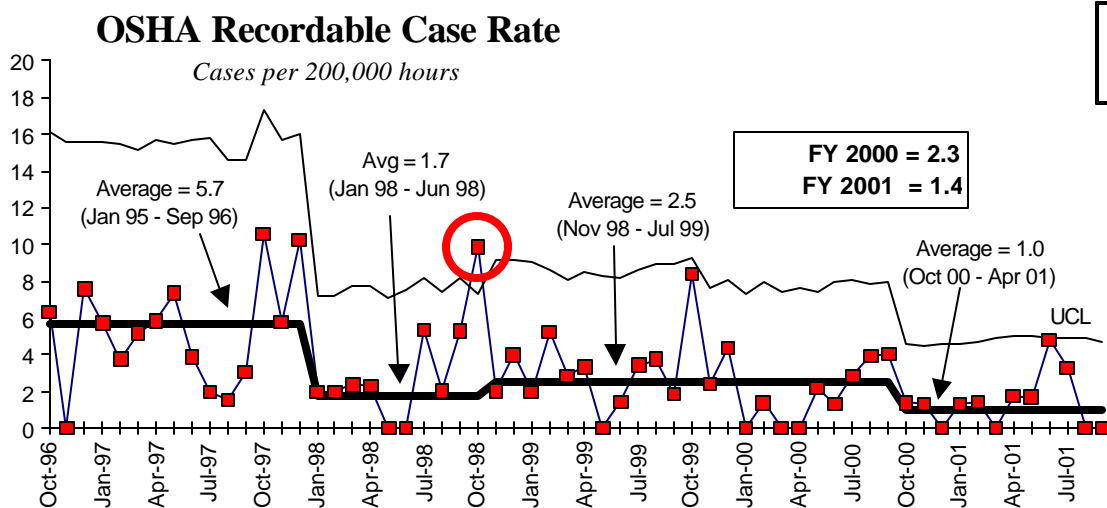
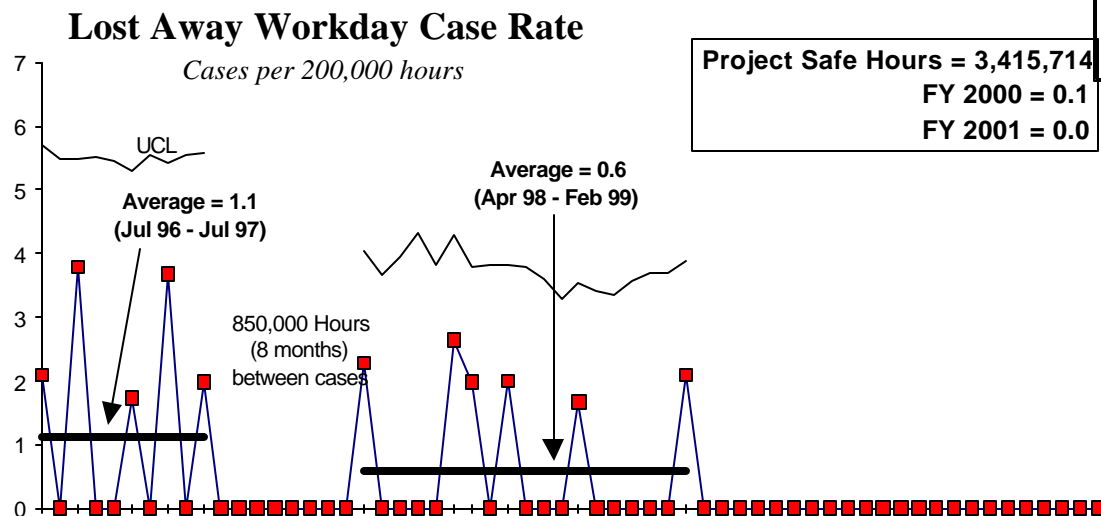
**K Basins Construction Projects** —

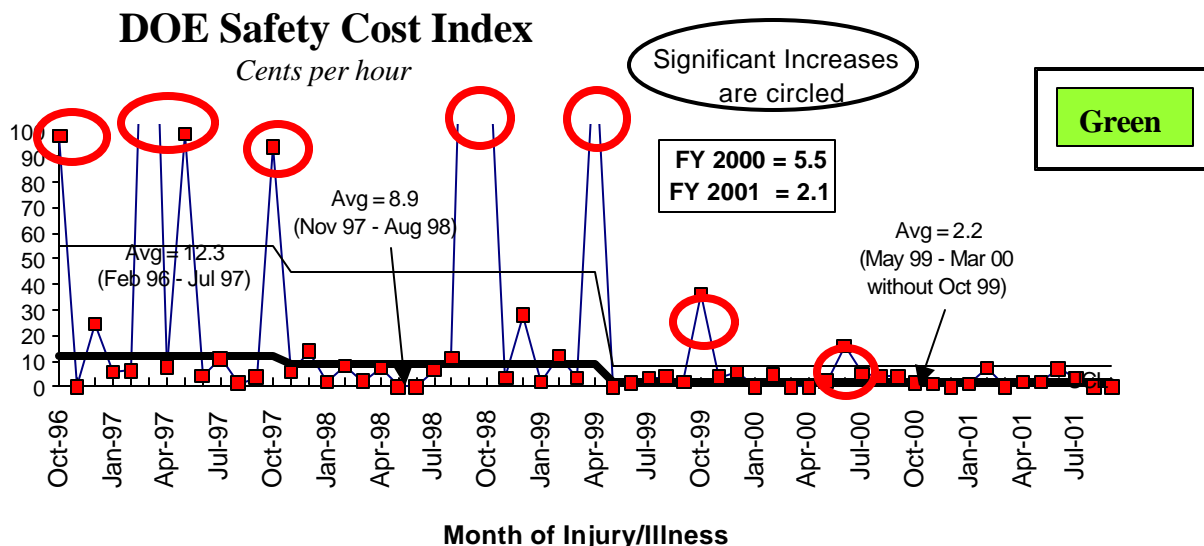
- Awarded contract for the design/fabrication of the Sludge Water System Cask, Transport and six Canisters
- Awarded the contract for the Fuel Transfer System Annex construction at KE and KW.
- Completed concrete saw cut and demolition for the annex construction.
- Completed 100 percent design for the AFTS Roadway, Cask, and Annexes.
- Completed 90 percent design for AFTS lift table, rails, and straddle carrier.

**Site-Wide SNFP Integration Activities** — All Shippingport Spent Fuel Canisters, including shield plugs and inserts, were received from the Joseph Oat Corporation. The DOE Operational Readiness Review was initiated for fuel removal from T-Plant. The definitive design for the T Plant upgrades needed for dry storage of K Basin sludge was approved October 31, 2001.

## SAFETY

During FY 2001, the SNFP personnel performed their work safely, resulting in a significant improvement to the project's overall safety performance. There were no lost time injuries reported within the project, thus allowing the project to achieve more than 3.3 million safe work hours at the end of the FY. In addition, project personnel sustained 10 fewer OSHA Recordable injuries than the previous year (approximately a 50 percent reduction) resulting in a year-end OSHA Recordable rate of 1.4 (compared to 2.3 for FY 2000). This improved performance was achieved by effective implementation of the ISMS core functions of management commitment and worker involvement.





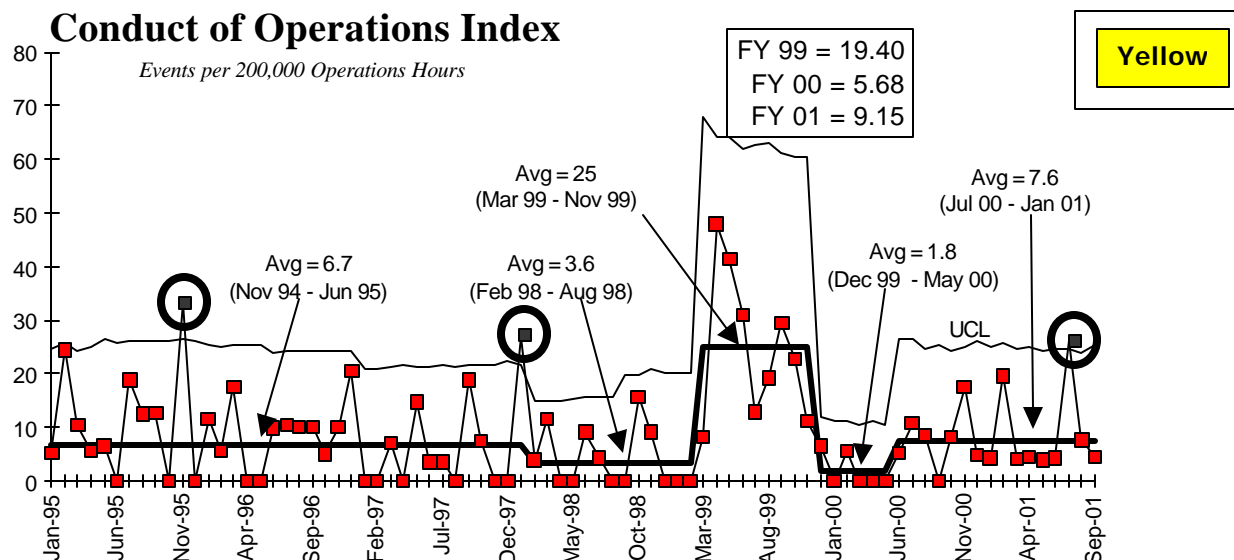
## ISMS STATUS

SNFP personnel continue to demonstrate a commitment to ISM in "Doing Work Safely". Several examples of this include:

- Achieved over 3.3 million safe work hours through September 2001.
- Conducted a "Time Out for Safety" following the completion of the third maintenance outage.
- Employees participated in SNFP's Employee Zero Accident Council (EZAC) program.

## CONDUCT OF OPERATIONS

In an effort to raise the project's focus on worker safety and conduct of operations, a weekly review of lessons learned and occurrence reports is conducted at the opening of the SNFP senior staff meeting. The project continues to emphasize worker safety and conduct of operations with all project personnel.



## BREAKTHROUGHS / OPPORTUNITIES FOR IMPROVEMENT

### Breakthroughs

Green

**105K West Fuel Processing/Production Improvements** – K West Fuel processing times have been reduced by more than 50 percent during the past year. The current average processing time is 38.9 working hours, 6.1 working hours less than the required target processing time of 45 working hours.

**CVDF Fuel Processing/Production Improvements** – Processing times at the CVDF have been reduced from approximately 100 working hours per MCO to a current average of 86.2 working hours per MCO (3.8 working hours less than the required target of 90 working hours).

**Deactivation Acceleration** – The plan to accelerate 100 area deactivation consistent with the stretch commitment has been approved and incorporated into the SNF Baseline (BCR No. SNF-2001-023). This change establishes a new baseline that accelerates deactivation of the 100K Area to September 30, 2006.

### Opportunities for Improvement

Green

**Fuel Processing at K West** – Efforts to reduce fuel processing times at the KW basin and the CVDF continue to progress.

**K West Sludge Container and Storage Optimization** – A Value Engineering session was facilitated to consider more cost effective container configurations and storage options, which could lead to the elimination of the storage of KW sludge in a pool at T Plant. Detailed scope analysis of the baseline for the most promising option (using a large container similar to the one used for KE sludge) is in progress.

**T Plant Readiness to Receive KE Sludge** – Methods to accelerate the T-Plant's readiness to support early sludge removal from the KE Basins continue to be evaluated. The definitive design for the T Plant upgrades needed for dry storage of K Basin sludge was approved October 31, 2001.

## UPCOMING ACTIVITIES

- Complete installation of KW Basin SNFP canister cleaner and begin operations in November 2001.
- Initiate Shippingport fuel shipments to the CSB in November 2001.
- Initiate construction in T Plant for the upgrades necessary to support dry storage of the K Basin sludge in November 2001.
- Approve start of construction for the KE and KW Basin facility modifications for the AFTS the first quarter of FY 2002.
- Continue MCO shipments through FY 2002.

## MILESTONE ACHIEVEMENT

Yellow

MILESTONE TYPE	FISCAL YEAR-TO-DATE				REMAINING SCHEDULED			TOTAL FY 2001
	Completed Early	Completed On Schedule	Completed Late	Overdue	Forecast Early	Forecast On Schedule	Forecast Late	
Enforceable Agreement	0	0	1	0	0	0	0	1
DOE-HQ	0	0	0	1	0	0	0	1
RL	0	0	2	1	0	0	0	3
Total Project	0	0	3	2	0	0	0	5

Only TPA/EA milestones and all FY 2001 overdue and forecast late milestones are addressed in this report. Milestones overdue are deleted from the Milestone Exception Report once they are completed. The following chart summarizes the FY 2001 TPA/EA milestone achievement and a Milestone Exception Report follows. The last milestone table summarizes the first six months of FY 2002 TPA/EA milestones.

Tri-Party Agreement / EA Milestones		
Number	Milestone Title	Status
M-34-16 (DOE-HQ Milestone No. S00-01-900)	"Initiate Removal of K West Basin Spent Nuclear Fuel."	Due 11/30/00 – Completed December 7, 2000. 
M-34-06-T01 (RL Milestone No. S04-99-521)	"Initiate K West Basin Spent Nuclear Fuel Canister Cleaning Operations."	Due 12/31/00 – Overdue. Forecast date November 30, 2001. Delays resulted from design process improvements. No impact on operations. 
M-34-26-T01 (DOE-HQ Milestone No. S15-02-002)	"Approve Start of Construction for the K East and K West Basin Facility Modifications for AFTS."	Due 09/30/2001 – Overdue. Preliminary forecast date November 2, 2001. Date based on initial subcontractor estimates and is subject to change. No impact on March 30, 2002 construction completion date. 
DNFSB Commitments		
	Nothing to report at this time.	

## MILESTONE EXCEPTION REPORT

<u>Number/WBS</u>	<u>Level</u>	<u>Milestone Title</u>	<u>Baseline Date</u>	<u>Forecast Date</u>
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### Overdue – 2

**S04-99-521 RL** Start K West Canister Cleaning Operations 12/31/00 11/30/01  
1.3.1

**Cause:** Suspended design last summer to simplify system and reduce costs. SNFP made a project management decision to defer work to FY 2001 and focus on near-term critical path items.

**Impact:** No impact to any other SNFP baseline schedule activities or TPA/DNFSB milestones.

**Corrective Action:** Currently in design and on schedule; to be started by November 30, 2001.

**S15-02002 HQ** Approve Start of Construction for AFTS 09/30/01 11/2/01  
1.3.1

**Cause:** Concerns identified during the 90 percent design review have delayed the end of design.

**Impact:** No impact to any other SNFP baseline schedule activities or TPA/DNFSB milestones.

**Corrective Action:** Project developing work-around schedules to mitigate potential downstream schedule impacts.

FY 2002 Tri-Party Agreement / EA Milestones		
Number	Milestone Title	Status
M-34-29	"Complete K East Basin and K West Basin facility modifications for AFTS cask transportation system"	<b>Due 3/31/02</b> On Schedule.
M-34-12-T01 (S04-97-621)	"Complete construction of K East Basin Sludge and Water System to support spent nuclear fuel removal."	<b>Due 9/30/02</b> On Schedule.
DNFSB Commitments		
	Nothing to report at this time.	

## PERFORMANCE OBJECTIVES

### Move Fuel Away from the River

EXPECTATION: Remove spent fuel from K Basins

**Move first MCO of SNFP from KW Basin and transport to the CVDF for processing by December 7, 2000 (TPA M34-16)**

**Status:** Completed on schedule.

**Move 116 Metric Tons Heavy Metal from KW Basin by end of FY 2001**

**Status:** Complete. A total of 126.94 MTHM (27 MCOs) were shipped from KW Basin by year-end.

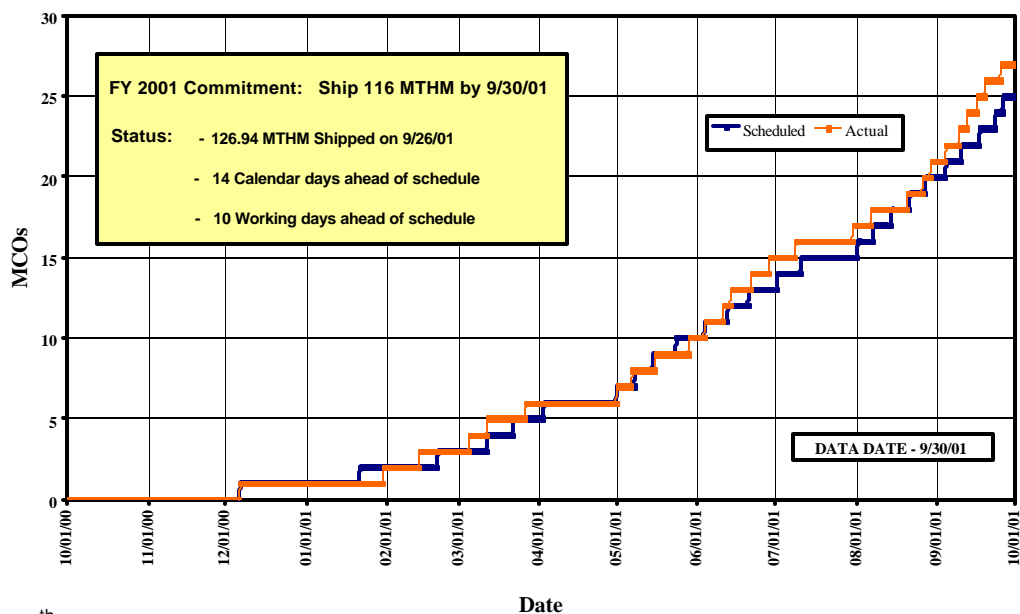
**Complete construction on Fuel Transfer System by March 30, 2002**

**Status:** On schedule.



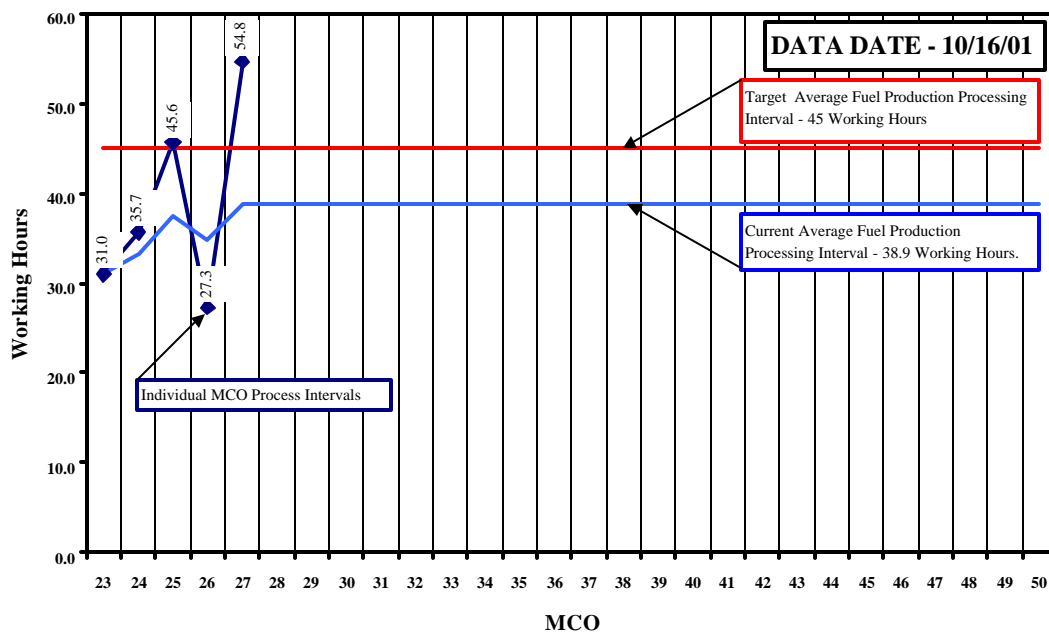
## PERFORMANCE OBJECTIVES (CONTINUED)

FY 2001 MCO Baseline Production Performance

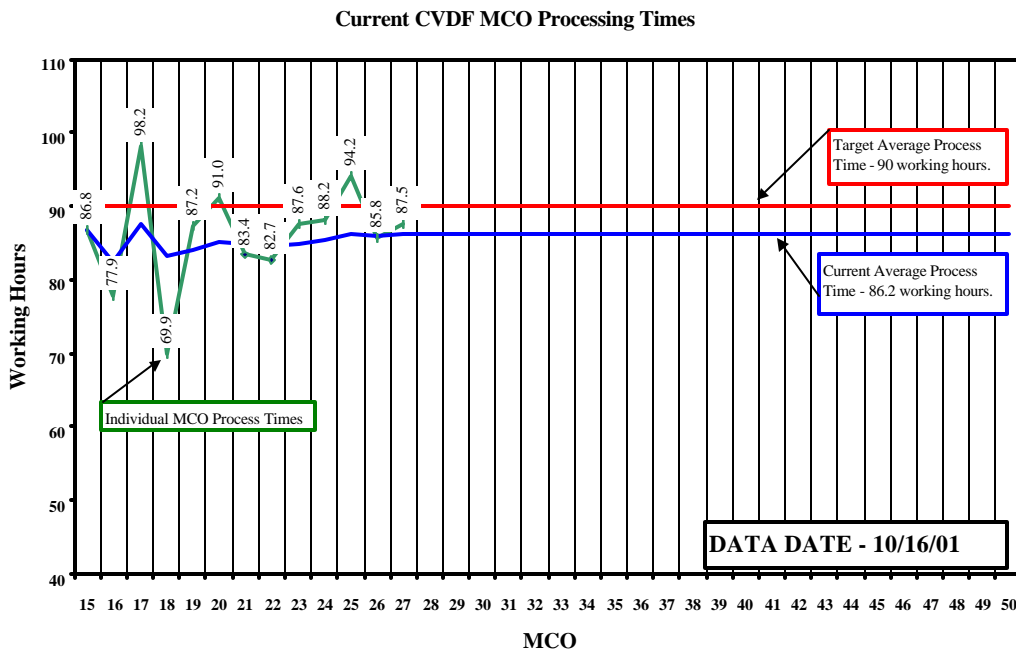


The 27<sup>th</sup> MCO was shipped to the CVD Facility for processing on September 27, 2001.

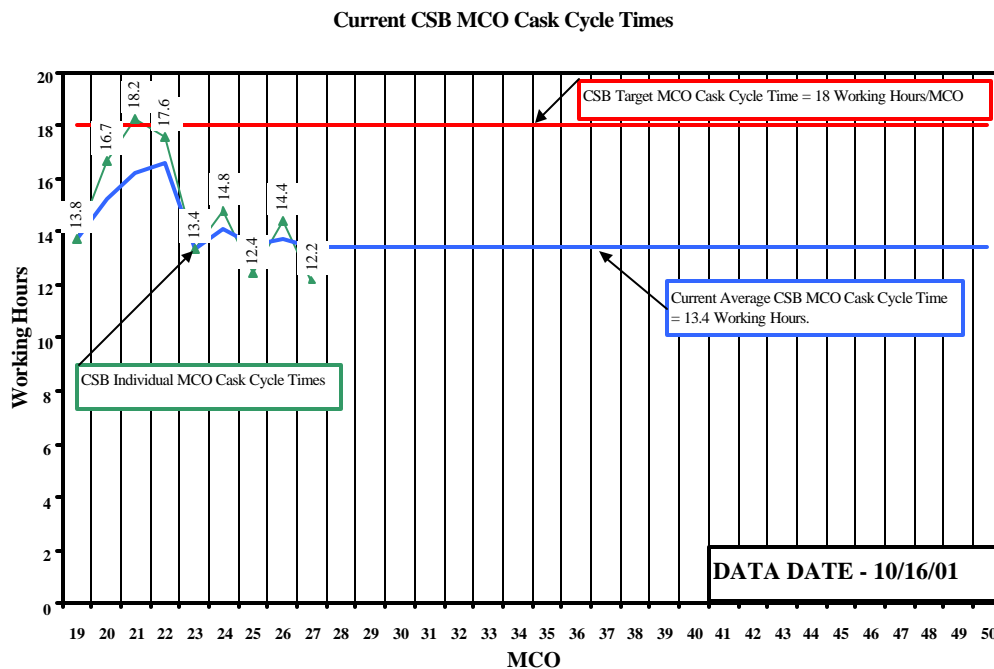
Current 105K West MCO Fuel Processing Times



## PERFORMANCE OBJECTIVES (CONTINUED)



The CVDF processed MCO number 27 in 87.48 working hours. The average process time for MCO Numbers 15 through 27 was 86.2 working hours, 3.8 working hours under the target time of 90 working hours.



The CSB stored and reloaded the cask for MCO Numbers 19 through 27 in an average cycle time of 13.4 working hours, 4.6 working hours under the target cycle time of 18 working hours.

## FY 2001 SCHEDULE / COST PERFORMANCE – ALL FUND TYPES CUMULATIVE TO DATE STATUS – (\$000)

Green

		FYTD							
By PBS		BCWS	BCWP	ACWP	SV	%	CV	%	BAC
PBS WM01 Spent Nuclear									
WBS 1.3 Fuel Project		\$ 176,863	\$ 170,704	\$ 167,140	\$ (6,159)	-3%	\$ 3,564	2%	\$ 176,863
<b>Total</b>		\$ 176,863	\$ 170,704	\$ 167,140	\$ (6,159)	-3%	\$ 3,564	2%	\$ 176,863

## FY TO DATE SCHEDULE/COST PERFORMANCE

The SNFP is performing within the expected parameters. The unfavorable schedule variance of \$6.2M is predominantly driven by non-critical activities that have sufficient float and/or have little or no bearing on enforceable milestone agreements.

The favorable cost variance is primarily due to reduced staffing levels.

For all active sub-PBSs and TTPs associated with the Operations/Field Office, Fiscal Year to Date (FYTD) Cost and Schedule variances exceeding + / - 10 percent or one million dollars require submission of narratives to explain the variance.

### Schedule Variance Analysis: (-\$6.2M)

#### Spent Nuclear Fuel Project — 1.3.1/WM01

**Description /Cause:** The majority of the SNFP schedule variance is made up of non-critical path activities associated with procurements and small construction projects that were put on hold. Construction activities associated with AFTS and SWS are slightly behind schedule due to late completion of design media. No additional impacts are projected at this time.

**Impact:** None expected at this time.

**Corrective Action:** Continue to closely monitor the construction activities to ensure overall schedule compliance.

### Cost Variance Analysis: (+\$3.6M)

#### Spent Nuclear Fuel Project — 1.3.1/WM01

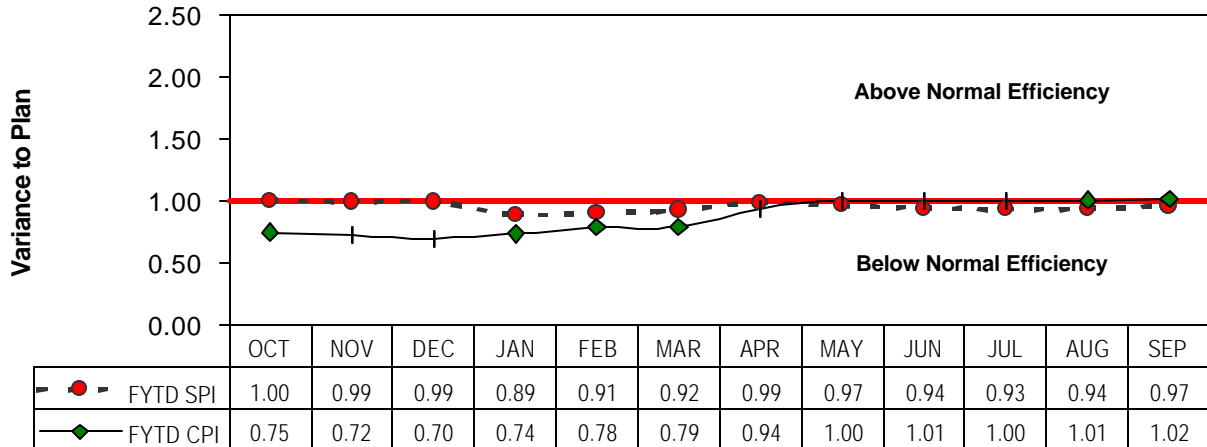
**Description/Cause:** The favorable cost variance is driven by underruns in the project direction and infrastructure support accounts due to reduced staffing levels in Project Controls and actions taken to reduce the original estimate needs in the infrastructure support account.

**Impact:** None to report.

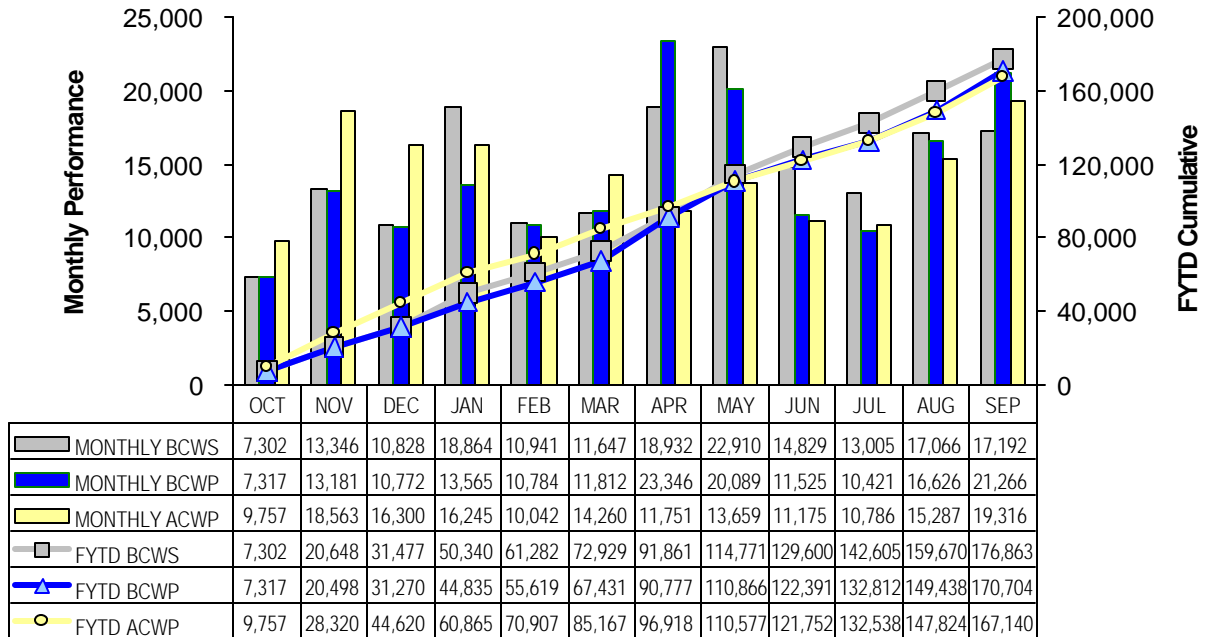
**Corrective Action:** None required.

## FY 2001 SCHEDULE / COST PERFORMANCE (MONTHLY AND FYTD)

### Cost/Schedule Performance Indices (FYTD)



### Performance Analysis FYTD and Monthly (\$000s)



## FUNDS MANAGEMENT FUNDS VS ACTUAL COSTS (\$000s) FY 2001

Green

	FY 2001 Funds	FY 2001 Actual Costs	Uncosted
1.3 <b>Spent Nuclear Fuel</b>			
<b>WM01</b>			
<b>Project Completion - Operating</b>	<b>\$196,577</b>	<b>\$166,761</b>	<b>\$29,816</b>
<b>Line Item</b>	<b>\$16</b>	<b>\$0</b>	<b>\$16</b>
<b>Total</b>	<b>\$196,593</b>	<b>\$166,761</b>	<b>\$29,832</b>

*[Status through September 30, 2001]*

\$28.038M required for carry-over (includes supplemental funding of \$10M).

## ISSUES

### Technical Issues

**Issue:** Operations Ramp-up for fuel scale fuel movement continues to be a challenge.

**Impact:** Hiring and retention of key resources at the SNFP are a concern given competing demands at Hanford.

**Corrective Action:** Currently, SNFP is aggressively recruiting key personnel critical to meeting the fuel production schedule. Over the next six months, SNFP will continue to interview, hire, train and qualify a significant number of Nuclear Process Operators. Currently the candidate pool for resources appears to be sufficient. SNFP is also in the process of identifying and interviewing candidates for Operating Engineers.

**Issue:** Equipment reliability continues to be a major concern for sustaining fuel movement.

**Impact:** Continued equipment failures may negatively impact meeting fuel movement commitments.

**Corrective Action:** SNFP has brought in additional expertise to help evaluate and enhance the Project's ability to predict potential future equipment failures. It is expected that this evaluation will lead to changes in preventive maintenance practices and the development of effective recovery plans to mitigate impacts of future single point failure events.

### Regulatory, External and DOE Issues and DOE Requests

None to report.

## BASELINE CHANGE REQUESTS CURRENTLY IN PROCESS

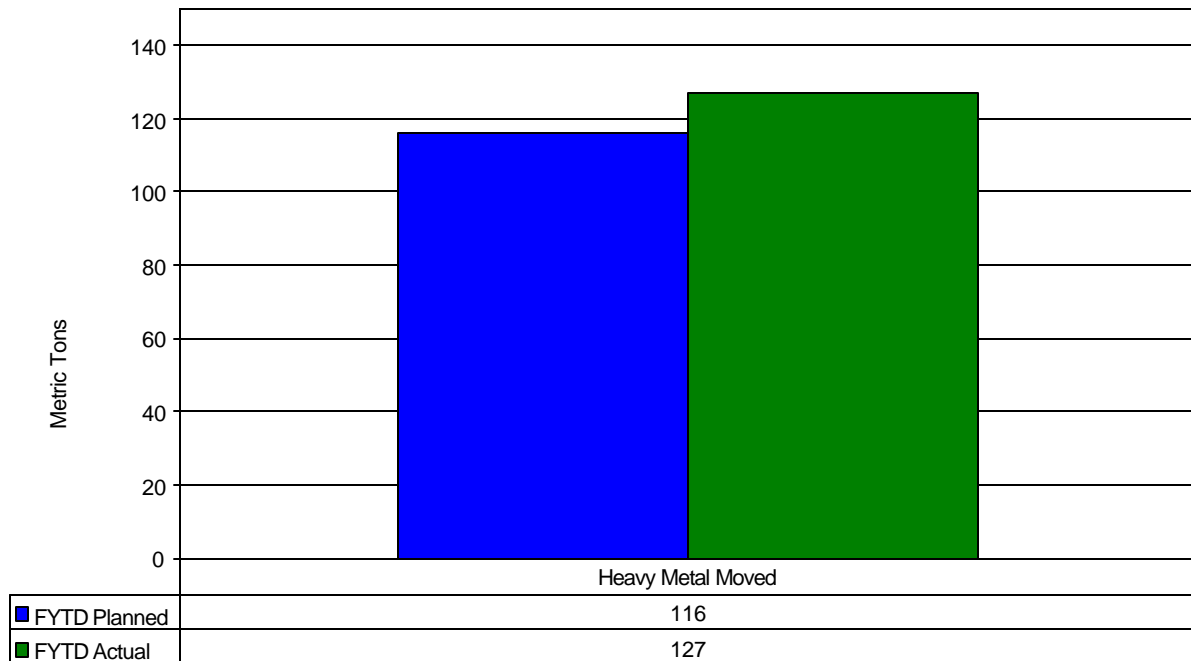
PROJECT CHANGE NUMBER	DATE ORIGIN.	BCR TITLE	FY01 COST IMPACT \$000	SCH	TECH	DATE TO FH RMB	RMB APR'VD	RL APR'VD	CURRENT STATUS
SNF-2001-014	04/20/01	CSB Weld Station Acceleration	174	Y	Y	06/05/01	06/14/01		BCR Returned Without Action. RL comments to be addressed in revised BCR (SNF-2001-014R1).
SNF-2001-016	04/30/01	Accelerated Sludge Capture and Removal Strategy	-6840	Y	Y	07/09/01	07/16/01	Yes	Approved by RL.
SNF-2001-023	06/09/01	K Basins Deactivation Acceleration	N	Y	N	07/09/01	07/16/01	Yes	Approved by RL.

## KEY INTEGRATION ACTIVITIES

- SNFP final disposition interface activities are ongoing with the National SNFP Program, including Office of Civilian Radioactive Waste Management (OCRWM) QA Program implementation. The OCRWM QA Program Audit was conducted by the National SNFP Program, which resulted in no deficiencies or corrective actions.
- The SNFP and Waste Management Project continued preparations for Shippingport Pressurized Water Reactor Core 2 SNFP removal. All Shippingport Spent Fuel Canisters, including shield plugs and inserts were received from the Joseph Oat Corporation.
- The SNFP and the River Corridor Project continued to interface on 324 Building (B Cell) SNFP removal.
- Neutron Radiography Facility along with Training Research Isotope Production General Atomics (TRIGA) and Fast Flux Test Facility (FFTF) SNFP relocation planning is ongoing with the FFTF Project.
- Activities continued for receipt at K Basins of SNF discovered by Bechtel Hanford Inc. during upcoming 105F and 105H reactor basins deactivation at K Basins.
- The Sludge Handling Project and T Plant Operations continued preparations for K Basin sludge storage at T Plant.

## Heavy Metal Moved

SNF Moved to Dry Storage



**Heavy Metal Moved:** Within +/- 10% of plan.